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TUSSOCK MOTH DEFOLIATES TREES IN RECREATIONAL REGION

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Defoliating insects are important enemies to many of our native park and shade trees, and they annually take heavy toll in recreational areas where their depredations are particularly objectionable. Several of these insects have well pronounced infestation cycles and are abundant only at periodic intervals.

Oslar's tussock moth, Hemerocampa oslari, is one species of this group which occurs in epidemic form at infrequent intervals in the central Sierra region where it attacks and defoliates fir and pine trees. A recent appearance of this moth in the Mammoth Lakes region of the Inyo and Mono National Forests on the east flank of the Sierras bids fair to cause considerable damage to the forest cover in this important recreational area unless the epidemic is of short duration.

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This infestation was first noticed by entomologists in the fall of 1937. Feeding caterpillars were found on four widely separated areas, each containing from 1000 to 2500 acres. The condition of the infested trees showed that they had been partially defoliated the preceding summer, indicating that the first heavy feeding occurred in 1935, and dating the beginning of the epidemic in 1934. The brood of 1937 was far heavier than those of any of the preceding three years but was still centered in the same areas. The concentration of a high caterpillar population in 1937 on the same trees partly defoliated the preceding two years resulted in a great stripping of their needles. Many trees were completely defoliated. The extent of defoliation on individual trees varied within wide limits but practically all attacked trees had lost most of the needles of the upper crown. The loss of 75 percent or more, of the foliage results in an abrupt cessation of ring growth, and it is doubtful if such trees will survive. Increment measurements show that the 1937 ring growth was subnormal on all trees exhibiting up to 50 percent defoliation and was entirely missing on completely defoliated trees. A high degree of injury was registered on defoliated tips and on main terminals in 1936, and many more died in 1937. Even if no further feeding occurs, this epidemic will have already resulted in many dead tops and lateral branches.

In this infestation the preferred host is white fir, Abies concolor, but Jeffrey pine, Pinus jeffreyi, is also taken where it occurs in an infested area. Red fir, Abies magnifica, has not been attacked although it is present in some of the infested white fir stands.

The infestations of this moth have not spread far from the original centers during the three years of its existence. This accounts for its local concentrations rather than of general dispersion over the fir stands of the region. The female moths are wingless and their migrations are therefore necessarily limited to short distances. Concentration of caterpillars on small areas foster natural control agents. Wilt disease had become epidemic in the 1937 brood which accounted for a high mortality in the prepupal caterpillars. This condition, together with an abundance of specific parasitic insects present during the 1937 season, may portend an early decline of the current epidemic.

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Adult male tussock moth, slightly enlarged.

The females being wingless cannot fly.

Effect of feeding on lateral twig tips. The twig died before the latest needle growth had fully developed.

Dead tops are the first serious injury resulting from severe defoliations.